AMENDMENTS TO THE CLAIMS:

Claims 1-26 were pending at the time of the Office Action.

Claims 1, 13, and 23 are amended.

Claims 1-26 remain pending.

1. (Currently Amended) An apparatus for performing a manufacturing operation on a workpiece, the apparatus comprising:

a base member having a first aperture disposed therethrough;

a drive platform having a second aperture disposed therethrough, the drive platform being spaced apart from the base member by a separation distance and aligned with the base member such that the first and second apertures are approximately aligned along an axis;

a plurality of guide members extending between the drive platform and the base member, at least one of the drive platform and the base member being moveable along the guide members to increase or decrease the separation distance;

at least one drive member operatively coupled between the drive platform and the base member, wherein the plurality of guide members and the at least one drive member are distributed around a perimeter of the first and second apertures; and

a servo motor operatively coupled to the drive member such that as the servo motor drives the drive member, the separation distance is varied.

2. (Original) The apparatus of Claim 1, further including a tool assembly coupled to the drive platform.

3. (Previously Presented) The apparatus of Claim 2, wherein the drive platform includes a first annular portion and the base member includes a second annular portion, the first and second annular portions being aligned along an axis and the plurality of guide members and the at least one drive member being concentrically spaced about the first and second annular portions, and wherein the tool assembly extends through the first and second annular portions along the axis.

4. (Original) The apparatus of Claim 3, wherein the tool assembly includes:

a motor shaft extending along the axis and rotatably coupled to at least one of the drive platform and the base member;

an armature winding disposed about at least a portion of the motor shaft; and

a field assembly coupled to at least one of the drive platform and the base member and positioned proximate the armature winding.

5. (Original) The apparatus of Claim 4, wherein the field assembly includes at least one rare earth magnet.

6. (Original) The apparatus of Claim 4, further including:

a controller operatively coupled to the servo motor; and

a speed sensor operatively coupled to the motor shaft and to the controller, the controller being adapted to receive a feedback signal from the speed sensor and to transmit a control signal to the servo motor.

7. (Original) The apparatus of Claim 4, wherein the motor shaft includes a lubrication reservoir coupled at a first end thereof and a lubrication channel longitudinally extending internally therethrough.

8. (Previously Presented) The apparatus of Claim 1, further comprising a tool assembly that includes:

a motor shaft extending along the axis and rotatably coupled to the drive platform;

an armature winding disposed about at least a portion of the motor shaft; and

a field assembly coupled to at least one of the drive platform and the base member and positioned proximate the armature winding.

9. (Original) The apparatus of Claim 8, wherein the motor shaft includes a drill collet adapted to secure a drill member.

10. (Original) The apparatus of Claim 8, further including:

a controller operatively coupled to the servo motor; and

a speed sensor operatively coupled to the motor shaft and to the controller, the controller being adapted to receive a feedback signal from the speed sensor and to transmit a control signal to the servo motor.

11. (Original) The apparatus of Claim 8, wherein the motor shaft includes a lubrication reservoir coupled at a first end thereof and a lubrication channel longitudinally extending internally therethrough.

12. (Original) The apparatus of Claim 1, wherein the at least one drive member includes a ball screw.

13. (Currently Amended) An apparatus for performing a manufacturing operation on a workpiece, the apparatus comprising:

a track assembly adapted to be attached to the workpiece;

a carriage assembly moveably coupled to the track assembly and moveable relative to the workpiece; and

a tool feed unit coupled to the carriage assembly and adapted to be coupled to a tool assembly and to controllably engage the tool assembly with the workpiece, the tool feed unit including:

a base member having a first aperture disposed therethrough;

a drive platform having a second aperture disposed therethrough, the drive platform being spaced apart from the base member by a separation distance and aligned with the base member such that the first and second apertures are approximately aligned along an axis;

a plurality of guide members extending between the drive platform and the base member, at least one of the drive platform and the base member being moveable along the guide members to increase or decrease the separation distance;

at least one drive member operatively coupled between the drive platform and the base member, wherein the plurality of guide members and the at least one drive member are distributed around a perimeter of the first and second apertures; and

a servo motor operatively coupled to the drive member such that as the servo motor drives the drive member, the separation distance is varied.

14. (Original) The apparatus of Claim 13, further including a tool assembly coupled to the tool feed unit and adapted to be engaged with the workpiece.

15. (Original) The apparatus of Claim 14, wherein the tool assembly includes:

a motor shaft extending along the axis and rotatably coupled to the drive platform;

an armature winding disposed about at least a portion of the motor shaft; and

a field assembly coupled to at least one of the drive platform and the base member and positioned proximate the armature winding.

16. (Original) The apparatus of Claim 15, further including:

a controller operatively coupled to the servo motor; and

a speed sensor operatively coupled to the motor shaft and to the controller, the controller being adapted to receive a feedback signal from the speed sensor and to transmit a control signal to the servo motor.

17. (Previously Presented) The apparatus of Claim 13, further comprising a tool assembly that includes:

a motor shaft extending along the axis and rotatably coupled to the drive platform;

an armature winding disposed about at least a portion of the motor shaft; and

a field assembly coupled to at least one of the drive platform and the base member and positioned proximate the armature winding.

18. (Original) The apparatus of Claim 17, further including:

a controller operatively coupled to the servo motor; and

a speed sensor operatively coupled to the motor shaft and to the controller, the controller being adapted to receive a feedback signal from the speed sensor and to transmit a control signal to the servo motor.

19. (Original) The apparatus of Claim 13, further comprising a controller mounted on the carriage assembly and operatively coupled to the servo motor of the tool feed unit.

20. (Original) The apparatus of Claim 19, wherein the carriage assembly includes a drive assembly operable to translate the carriage assembly along the track assembly, the drive assembly being operatively coupled to the controller.

21. (Original) The apparatus of Claim 13, wherein the track assembly includes:

first and second elongate flexible rails, the rails being spaced apart and approximately parallel to each other; and

a plurality of vacuum attachment devices connected to each rail and spaced at intervals therealong for releasably attaching each rail to the surface of the workpiece by vacuum, with the widths of the rails extending substantially parallel to the surface of the workpiece, the rails bending and twisting as needed to substantially follow the surface of the workpiece.

22. (Original) The apparatus of Claim 21, wherein each rail is relatively stiff in bending about a first bending axis and relatively flexible in bending about a second bending axis orthogonal to the first bending axis, and wherein each rail is mounted on the workpiece such that the first bending axis is substantially normal to the workpiece surface and the second bending axis is substantially parallel to the workpiece surface.

23. (Currently Amended) A method of performing a manufacturing operation on a workpiece, the method comprising:

providing a tool feed unit having a base member moveably coupled to a drive platform by a plurality of guide members, the base member defining a first aperture and the drive

platform defining a second aperture approximately aligned with the first aperture along an axis, at least one of the drive platform and the base member being moveable along the guide members to increase or decrease a separation distance therebetween, the tool feed unit including at least one drive member operatively coupled between the drive platform and the base member, and a servo motor operatively coupled to the at least one drive member, wherein the plurality of guide members and the at least one drive member are distributed around a perimeter of the first and second apertures;

operatively coupling a manufacturing tool to the tool feed unit; and

controllably rotating the at least one drive member using the servo motor to vary a separation distance between the drive platform and the base member and to engage the manufacturing tool with the workpiece.

24. (Original) The method of Claim 23, further comprising moveably supporting the feed unit proximate a surface of the workpiece.

25. (Original) The method of Claim 24 wherein moveably supporting the feed unit proximate a surface of the workpiece includes:

coupling a track assembly to the surface of the workpiece;

moveably coupling a carriage assembly to the track assembly; and

coupling the tool feed unit to the carriage assembly.

26. (Original) The method of Claim 25, wherein the coupling a track assembly to the surface of the workpiece includes applying vacuum to adhere the track assembly to the surface of the workpiece.